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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,159	01/31/2002	Akihiko Takeo	P 290677 T2TT-01S0822-1	6516
7590 08/31/2004 Phillsbury Winthrop LLP 1600 Tysons Boulevard McLean, VA 22102			EXAMINER DAVIDSON, DAN	
			ART UNIT 2651	PAPER NUMBER
DATE MAILED: 08/31/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/059,159	Applicant(s) TAKEO, AKIHIKO	
	Examiner Dan I Davidson	Art Unit 2651	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8 is/are rejected.
- 7) ☒ Claim(s) 3 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The information disclosure statements filed January 31, 2002; May 14, 2003; and June 8, 2004 have been received and have been considered and made of record.

#### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 4-6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Saito et al (US 6,747,823 B2).

Re claims 1 and 4; AAPA discloses a disk drive (page 1, lines 12-13) comprising: a magnetic head having a write head for writing data on a data recording medium by a perpendicular magnetic recording method and a read head for reading data from the data recording medium (page 2, lines 12-20); and a disk recording medium provided with a plurality of tracks as data regions for storing data written by the write head and a non-recording region provided between tracks kept in a DC magnetized state (page 3, lines 4-13).

AAPA does not disclose that the non-recording region provided between tracks is kept in an AC magnetized state or a random magnetized state instead of in a DC magnetized state. Saito et al teach replacing the conventional DC demagnetization method (which generates a DC magnetized state) in the initial magnetizing process of a disk with an AC demagnetization method (which generates a random magnetized state) (col. 8, lines 49-54). Since the non-recording regions provided between tracks are in the state in which they are initialized (since there is no recording in those regions), the combination of AAPA and Saito et al satisfies the limitation that the non-recording regions between tracks are kept in an AC magnetized state or a random magnetized state.

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify AAPA with the teaching of Saito et al drawn to using an AC or random magnetized state instead of a DC magnetized state in the non-recording region; motivation being symmetry of a transferred waveform in a servo magnetic transfer for a perpendicular recording medium (col. 4, lines 5-14; col. 9, lines 32-36; col. 1, lines 13-14).

Re claim 2; AAPA discloses that the disk recording medium is a double-layered recording medium having a recording magnetic layer for storing data and a soft magnetic layer interposed between the recording magnetic layer and a substrate (pg. 1, line 23 – pg. 2, line 5).

Re claim 5; AAPA discloses that the read head has a GMR element and reads data recorded by the perpendicular magnetic recording method while it is close to a

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surface of the disk recording medium (page 3, line 27 – page 4, line 2; the limitation “close to a surface of the disk recording medium” is open-ended and interpreted broadly).

Re claims 6 and 8; AAPA discloses a process for manufacturing a disk drive of a perpendicular magnetic recording type (page 2, lines 23-24; page 3, line 4), comprising: a recording step for recording a DC magnetized pattern on an overall surface of the disk recording medium; and a track formatting step for forming a plurality of tracks on the overall surface of the disk recording medium with an area between the tracks left as a non-recording region (page 3, lines 4-13). The limitation “at a high frequency” is open-ended and interpreted broadly. AAPA does not disclose replacing a DC magnetized pattern in the first of the two steps in the process with an AC magnetized pattern or a random magnetized pattern. Saito et al teach this limitation, and further teach that the random magnetized pattern is an AC demagnetized pattern (col. 8, lines 49-54).

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify AAPA with the teaching of Saito et al drawn to replacing the DC magnetized pattern with a random magnetized pattern that is an AC demagnetized pattern; motivation being symmetry of a transferred waveform in a servo magnetic transfer for a perpendicular recording medium (col. 4, lines 5-14; col. 9, lines 32-36; col. 1, lines 13-14).

***Allowable Subject Matter***

5. Claims 3 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claim 3; the prior art of record, and in particular the combination of AAPA and Saito et al, fails to teach or suggest that the non-recording region of the disk recording medium is kept in a state where an AC magnetized pattern is recorded at a frequency equal to or higher than a maximum frequency of a signal magnetic field recorded in the tracks.

Re claim 7; the prior art of record, and in particular the combination of AAPA and Saito et al, fails to teach or suggest that the recording step for recording an AC magnetized pattern at a high frequency or a random magnetized pattern is performed with respect to the overall surface of the disk recording medium except for the predetermined servo area.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McNeil et al (US 5,495,379 A) teach vertically recording information on a disk and creating erase bands between the disk tracks.

Uehara et al (US 4,581,661 A) teach an erasing width wider than the width of a recording track on a recording medium, wherein alternating current is preferred for the erasing signal.

Kawbata (JP 02027504 A) teaches performing AC-erasing to a perpendicular magnetic recording medium until the recorded data is transited.

Kawbata (JP 01256011 A) teaches improving recording density and reducing reproduced noise by arranging a thin film head for AC erasure at the front side in the relative moving direction to a recording medium and arranging a thin film head for information recording to the rear side.

Sasaki et al (JP 59231720 A) teach providing an AC bias magnetic field to a medium of a frequency high enough to give no effect to a recording signal.

Takei (JP 57205827 A) teaches applying an AC magnetic field to a vertically magnetized recording tape.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I Davidson whose telephone number is (703) 308-8535. The examiner can normally be reached on Monday, Tuesday, and Thursday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DID  
Dan I Davidson  
August 5, 2004



SINH TRAN  
PRIMARY EXAMINER